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ABSTRACT

Suggestions on how to enhance college teaching are provided. Lecturing is stressed as a critical component of teaching, and each lecture's introduction, main body, and conclusion must be correlated prior to any given lecture. Information on how to compose and give a lecture includes: what to put in an introduction; what can be done to help the student grasp the main body of the lecture; how to write a conclusion; what is the best style; how to ask for questions; how to deal with offensive students in a lecture situation; and how close to stay to the text. A section on asking questions focuses on: how to get students ready for a question and answer session; what kind of questions to ask; how to get past the factual level; how to answer; how to cue students into giving more detailed or complex responses; how to call on volunteers and non-volunteers; what to do if a student answers incorrectly; and bad habits. Evaluation topics are: use of "canned" tests; what to include in a test; length of tests; precautions to take in constructing multiple-choice items; marking essays and projects; what makes a test fair; and what to do with a filing student who approaches the teacher asking for help.

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GRADUATE TEACHER PROGRAM NEWSLETTER

THE TUTOR

Volume 3 No. 4 University of Colorado at Boulder Winter 1987

TIPS FOR TEACHING - by Philip Langer
Professor and Chair
Educational Psychological Studies

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Graduate Teacher Program Newsletter

the TUTOR

Vol. 3 No. 4 University of Colorado at Boulder Winter 1987

TIPS FOR TEACHING

By Philip Langer, Professor and Chair
Educational Psychological Studies

Lecturing

Lecturing is the oldest form of instruction, probably invented by the first generation of cavedwellers. I have a reproduction of a woodcut, drawn in the fifteenth century, of a class held at the University of Paris. Update clothing styles and you have E050. Interestingly, while lecturing is the oldest instructional technique, not much research has been done on factors that improve its effectiveness.

However, there are several things we already know. First of all, we can all remember that as we moved up the public school ladder, we encountered more and more lecturing as the preferred teaching strategy. Students, by the time they reach college, are obviously familiar with lecturing and have developed some reasonably good skills in coping with lecturer styles, formats, and note-taking. Second, within a given lecture hour, some research suggests that there is a lot of initial enthusiasm, in both the instructor and class, which slowly diminishes as time wears on. By midpoint, student receptivity begins to diminish significantly, and then recovers some enthusiasm at the end of the hour. Unfortunately, there is no corresponding motivational boost for the instructor. And finally, if there is any truth to the axiom "we teach as we were taught," the same can be said for lecturing. Basically, we often wind up imitating the best lecturer we ever had. Talk about the superstitious behaviors generated!

Overall a lecture has three parts: *introduction, main body,* and *conclusion.* Each of these serves a different function. It should be emphasized that all three must be correlated prior to giving the lecture. That is, it is impossible to prepare a valid *introduction* unless you know full well what you will be doing throughout the body of the lecture. Lectures must have a clearly defined structure in order to assist student learning. All other things being equal, your preparation bears some relationship to student learning.

What should the introduction include?

I generally like to include at least two elements. First of all, I usually review key concepts from the previous lecture, especially as they assist in the comprehension of new materials. Secondly, I set out for the students what I intend to discuss in terms of basic concepts. There are a number of ways to present an overview of the lecture. Sometimes a good beginning is simply a statement such as: "Today I will talk about the key processes involved in the perception of color." On the other hand you should alert students to the fact that you may be presenting a number of somewhat diverse topics. In that case try to relate them in some manner if possible: "Operant conditioning has made a number of contributions in various applied settings. I would like to discuss the critical principles derived from behaviorism that have led to these applications." Anything that helps the student grasp the overall structure of the lecture is helpful; it provides at least a basic framework for organizing the information.

What should I do to help the student grasp the main body of the lecture?

I cannot overemphasize the necessity of avoiding minute detail. Lecturers often feel impelled to cover everything. My own experience has been that a good lecture not only organizes the content better than most texts, but also gives students some idea as to what the instructor considers important. *You* must help students make some critical discriminations. Otherwise they wind up trying to memorize trivia as well as critical concepts—and wind up doing neither well.

Relevance can be indicated through the use of teaching aids such as charts, graphs, the blackboard, vocal inflections, and/or direct statements by the instructor. I should have kept the cartoon I once had where the student says to the instructor

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DON'T MISS
THE
GRADUATE TEACHER PROGRAM SPRING INTENSIVE
Tuesday, January 8, 1988
UMC 157 & 158

All graduate students, faculty, and staff are cordially invited to attend.

Tips for Teaching: Lecturing *(continued)*

after class: "Congratulations, Professor. I have never attended a lecture in which the main points were more cleverly concealed."

Finally, when you move from topic to topic, you should provide "markers" in the form of specific comments. Hence, if you are moving from Topic A to Topic B, tell students directly. Otherwise some may spend a lot of useless time trying to relate what they unfortunately think is information on the *same* topic.

And the conclusion?

Summarize the main points, but do not add any radically new information. If there is anything in the forthcoming assignment which relates to what has just been covered in class, point out the relevant relationships. In addition, do not let students tyrannize you into cutting short concluding statements by closing books, getting packs, etc. What I have learned to do is speak a bit more softly, and watch peers apply pressure to curtail confusion.

What's the best style?

Do not imitate a style in which you do not feel comfortable. It is not necessary to be a stand-up comedian. Indeed, student learning is more related to good management than to jokes. Humor has its place in a lecture, but the value of a lecture composed of one-liners is debatable. However, *do not read directly and continuously from your notes.* I have learned to review my notes carefully before lecturing, so I have a good grasp of what material I intend to cover. Then I refer to them when I want to be precise about a critical concept or make sure I have covered all key points.

Should I ask for questions?

Sad but true, the larger the group size the fewer the students who will ask questions. That is why we use discussion sections. However, one simple technique is to wait around a few minutes after class and let students come to you. In fact, if students keep asking questions about the same content, I take time before starting the next lecture to clarify the issues raised by those questions. On the other hand, if the section size is small enough to encourage questions, remember two things: 1) Treat each question as important to the student (as opposed to: "only an idiot would ask that"). 2) Answer the question directly. This means *pay close attention to the question itself.* Too often we answer what *we* wanted to hear.

What about the student who keeps butting into the lecture?

In a large lecture session that is not likely to happen. When it does occur (usually in a smaller group), simply tell the student you do not want to interfere with the lecture, but will answer her question after class. If it gets really serious, I would most definitely talk to the offending student.

How close should I stay to the text?

That is the most difficult question of all to answer. There are several guidelines which may help. After all, a lecture is one way of presenting relevant content which complements and supplements the text. On the basis of this belief, I do not hesitate to include additional concepts and examples which contribute to student learning. I occasionally include content related to some research I am doing. Generally I can defend the decision on the grounds that it is at least marginally relevant and personally motivating. Finally, I never devote any significant time to content which I cannot justify on the basis of the first two guidelines. This is especially true in beginning courses such as Psychology 100. You can bet the students are having enough problems without their instructor sailing off into the wild blue yonder. The intent is for students to use the text to make sense of the lecture, and vice versa.

Asking Questions

Interestingly enough, the most common classroom strategy in public schools is some form of the recitation/question/discussion paradigm. I want to take up several key issues regarding the use of questions. While research does not show any conclusive relationship between question types and student achievement, the use of more diversified questions does enable the teacher and student to more fully ascertain the extent of student knowledge. Additionally, teachers make some rather dreadful mistakes in the management of the strategy itself.

To make the most effective use of a questioning strategy in your class, it is worthwhile to keep several guidelines in mind. First of all, the questioning approach is not a good technique for introducing new information; lecture is a much better method. On the other hand questions are very useful in determining what students already (or should) know. In fact, good review sessions are based around questions. Second, questioning should proceed along developmental lines, from simple to complex. And third, the major or basic questions you wish to ask should be written out in advance. This does not preclude the use of questions developed from the discussion, but it is inexcusable for the instructor to conduct a class without any preparation regarding key questions.

How should I get students ready for a question and answer session?

The best approach is to inform the students in a prior meeting that you intend to cover specified content and will be questioning them about it. You can then start out the period by asking questions designed to elicit that information. Students who clearly demonstrate they have not read the material should be called in for a warning, and if such a performance affects their grade they should be apprised of the fact. *Do not make demands of students you do not intend to enforce.* Most students will recognize you are serious about the process, and few people want to consistently play the fool.

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Tips for Teaching: Asking Questions *(cont.)*

Just what kinds of questions are there, anyway?

Question types can range from factual to more complex types calling for analysis, evaluation, and problem solving. Determining the type you are using lies in the question stem. Questions that start out with "who is", "what is", "what are", "list", "tell me" are usually designed to get at basic information, and as I suggested earlier serve a very useful function *early in the session.* The problem is that teachers never get beyond this level, thereby never forcing students to do some complex processing of information. Failure to ask more of students means they can operate on a fairly shallow level, insuring that those who take good notes or have good recall can succeed admirably.

How can I get past the factual level?

The easiest way for a beginning teacher to demand more of students is to ask them to "explain in their own words" such things as the definition of a concept. The student will not be able to simply present a well-memorized verbal chain. You can then begin to include key words in your question stems as "compare," "distinguish," "relate," "analyze," "evaluate," and "discuss." While it is true that not every word guarantees a more complex question, it is equally true that questions containing these key words are more likely to contain more complex questions.

What about the answer?

A question is basically a cue; a discriminative stimulus to us operant-types. However, if you want to establish the more complex question in your class as a cue calling for in-depth responses, you must reliably accept only (i.e., reinforce) responses of a quality that match the intent of the question. In short, if the question requires thought, then accept only answers that show cognitive processing at something above the spinal reflex level. That is, a mumbled "Pavlov" to "who is considered the founder of classical conditioning" might be acceptable. On the other hand if the question was, "what are the critical conceptual differences between behavioral therapy and rational-emotional therapy" and you accept "reinforcement" as the answer, you are not asking the student to deal with the question as intended.

How else can I cue students into giving more detailed or complex responses?

The best strategy is to *pause* after asking the question, and allow students to prepare a response. Failing to pause will generally force students to start out with a woefully inadequate response, and only then begin to develop a more complete response. This is not considered desirable. In fact, the act of pausing itself will also come to serve as a cue for more detailed responses, along with the proper phrasing of the question.

Do I call on volunteers or non-volunteers?

Call on both types, otherwise students will learn how to avoid getting singled out if they do not know the answer. That is, if you call on volunteers, those who don't know will keep their hands down. If you call on non-volunteers, they will raise their hands. Occasionally go back to a student who responded earlier, otherwise they will learn that once they have answered a question—and perhaps the only one they knew—they are "safe".

Do I ask the question first, and then call on the student, or vice versa?

Always ask the question first and then call on the student. This forces everyone to at least mentally prepare an answer. Calling on the student first gets everyone else off the hook.

Any other bad habits?

There are several. First of all, never repeat student answers. What often happens is that you embellish the initial response to make it acceptable, and then give the student credit for what was really a poor response. Second, do not get into the habit of repeating questions. This demands that students pay close attention the first time.

What happens if a student gets the answer wrong?

There are several things to keep in mind. First, never tie the incorrect response to the student by name. It is a blow to the student personally. Thus "I do not believe the answer is correct" is preferred to "Ms. Smith, you are wrong". Second, if part of the answer is correct, affirm to the student which part is right. Third, help the student derive the correct answer through prompting and other forms of guidance. Sometimes, especially if it is a straight factual question, this may not be possible. However, these are comparatively rare. If it does happen, and you must move on, do so with a minimum of fuss.

Prompting the correct answer is perhaps the most difficult for a beginning teacher to learn, since a bad answer is sometimes considered a reflection on the adequacy of teaching. Indeed, we often move quickly to the student who gives the right answer to reaffirm our belief we are doing a good job. By showing patience and trying to help the student salvage something, we can maintain a better student attitude in class. Simply dismissing the incorrect response neither enhances that student's learning nor increases the likelihood of further involvement.

GRADUATE STUDENT FORUM

Comments on the 1987 GTP Fall Intensive:

- [the presenters'] enthusiam about teaching... reignited my enthusiam to teach again."
- I appreciated the sample syllabus, the helpful instructions on making the first day count, the sense of humor by the presenter, and overall, the down-to-earth, very helpful information."
- ...the workshop...made me think independently and consider new approaches to teaching...it gave me several important concepts and tips to improve my teaching skills."

Evaluation

The topics involved in evaluation are so broad I can address only a few critical items. These include factors that impinge on the reliability and validity of a test, as well as the scoring of papers, projects, and other essay-like products.

The reliability of a test is, for purposes of evaluation, the stability of the test score, more basically, the standard error of measurement. Obviously the larger the error of measurement, the less trust in the score as a viable measure of student performance. One technique is to increase the number of items to a point where the stability is acceptable to you. Obviously there are limits. You can make the test so long that you are either including trivia, or the students cannot finish in time. We will deal with these problems below.

Validity, or what the test measures, is commonly judged on the basis of the test content itself. While face validity is usually adequate, I should like to discuss several faulty test construction techniques which diminish validity.

Should I use "canned" tests?

Most text publishers for survey courses such as General Psychology generally include test files as part of the package. Instructors use them because they are time savers. These test files generally range from good to awful, and frequently have never been tested in class. The key problem is that questions coming strictly from the test file will not include content added in lecture. If students catch on that the tests are tied solely to the book, the additional materials you bring to class will be ignored.

What then should the test include?

It follows that both lecture (or discussion) and text are legitimate sources of test items. I would not hesitate to use good items from the publisher file, but would also be certain to use questions clearly derived from additional lecture or discussion materials.

How long should the test be?

As a rule of thumb I assume that the average student can complete one multiple-choice item per minute. If there are 50 minutes available, I give 50 items. This usually allows the student to check answers, and a test of 50 items generally has adequate reliability.

What are some precautions to take in constructing (or selecting) multiple-choice items?

As one might guess, some of the comments made regarding questions apply here. One of the most common mistakes made in constructing multiple-choice items is to develop questions as basically fill-ins derived from the text. For example, you come across the sentence: "An example of a variable-ratio schedule is gambling." The multiple-choice item becomes: "An example of a variable-ratio schedule is: (a) fixed-ratio, (b) fixed-interval, (c) variable-ratio, and (d) variable-interval." Stay far away from such construction strategies since the test validity becomes highly correlated with recall for precise text wording. I can recall one test file *solely* derived in such a manner.

Libraries Instructional Services, Deborah Link, **492-8302.** The Instructional Services Office offers library research workshops and presentations to classes by instructor request. The Office also prepares a variety of library instructional materials. Consulting is available for personal research and for developing library-based course assignments. Individual students may also be referred to the Reference Desks throughout the library system for research assistance.

Second, be sure you include several items which require more complex processing. These are difficult to construct, but it is possible to have a student recognize that an alarm clock is a CS, instead of recalling Pavlov used a metronome. The intent is to show the importance of using items that go beyond a simple factual level.

Third, the wording of items holds two implications for you. First, the smart (testwise) student goes through the entire exam before responding. All too often the answer to one question may be found in the stem of another. Thus the student may not recall Pavlov in connection with classical conditioning, but may find an item which starts out by identifying Pavlov with the critical experiment described in the text. Next, if the question stem ends in "a," and all the choices begin with a vowel except one, it does not take a genius to figure out the correct answer. The best way to avoid the problems is to use "a(n)." The same thing is true for plurals, i.e., use "is(are)."

What else?

I'll let you in on a secret. If you haven't got a clue as to the correct answer on a multiple-choice test, choose the longest response. The teacher wants to be able to defend it. In short, length of response can be a clue.

Next, avoid as much as possible test items that have as a response choice "all of the above." This allows the student who knows only part of the answer to accurately guess the rest, thereby diminishing validity. For example, if there is a choice consisting of "all of the above," and the student knows that at least two of the answers are correct, even if the third is unknown, the "all of the above" is chosen and is correct. I also tend to avoid "none of the above" as a choice since it involves the process of elimination. I would rather have students show me they know the correct response.

And finally, teachers fall into the trap of favoring certain positions for correct choices. Students sometimes pick up on the fact that it is either the first or last choice, or somewhere in the middle. To avoid this problem, I use a set of 3x5 index cards labelled "1," "2," "3," and "4." After I construct the choices I shuffle the deck, and use the number that comes up as position for the correct response. If "2" comes up four times in a row, so be it.

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Tips for Teaching: Evaluation *(continued)*

What about marking essays, projects, etc.?

Every study I have ever seen points out that the scoring of essays (and similarly-related products) tends to be very unreliable. I would like to give you a set of procedures for increasing reliability.

First, construct the model answer. If the content is highly diversified (as in the case of a project) be sure to include standards of performance or adequacy. This model response consists of what you are prepared to accept.

Second, select from the top, middle, and bottom of the pile about a half-dozen papers (or projects, etc). This avoids sampling problems.

Third, if there are several parts of the test, such as a series of essays, read only one question at a time. This eliminates the "halo effect." That is, it might happen that the first response of a particular student is so good (or bad) it biases your judgement regarding his answers in other parts of the test.

Fourth, make written comments (good or bad) as you read. This forces you to concentrate throughout, and not fall into the trap of skipping along looking for key words or concepts. Also, if the student questions your judgement you won't have to rack your brain trying to recall precisely *what did* lead to your decision. Students, and instructors, should be responsible for everything they include.

Fifth, you will find yourself arranging papers in one of several piles, based on your model. Initially there are usually three: below average, average, and above average. Do not assign a score. Now start reading, entering comments as you did before and placing each paper in one of the piles. Again, assign no values.

Sixth, if there are more than 10-15 papers, stop and reread through the piles. This is to check and see if your frame of reference has shifted, that is, check to see if you are still being consistent.

Seventh, after you have finished (and you may have more than the initial three piles) assign a *uniform* value to each paper in a given pile. I have found that I can more easily defend scores if those within a given pile have the same value, and are separated by several points from the next pile. Hence giving Pile A 20 points, and Pile B 16 points is a lot easier to justify than "why did he/she get 18 points and I got 17?"

And yes, that is precisely the way I do it, which is why Psychology 100 is based strictly on objective testing. I feel that if you don't want to read essays, don't give them.

When is a test fair?

Most students consider a test fair if it deals with what they were led to believe would be covered based on reading the text, and attending lectures and discussions. That is why in preparing the test I try to give at least some emphasis to topics presented in lecture. That does not mean that I cannot include items not discussed in lecture, but clearly in preparing the test one must keep a sense of perspective. Students who feel that effort and achievement are related, allowing for such differences in ability which they *do* recognize, are more likely to persist in giving it their best shot.

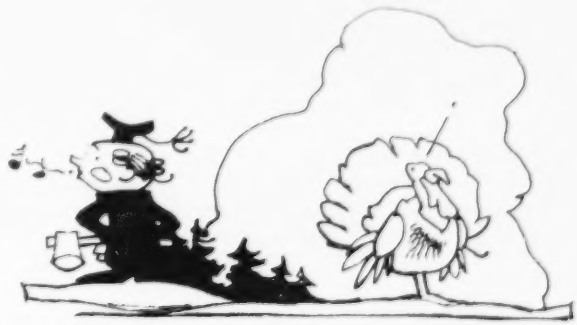
TOOTER'S TEACHING TIPS

1. Be friendly, for crying out loud! Be pleasant, be enthusiastic! We are in the most extraordinary position of being paid to do what we enjoy doing!
2. Remember that interest in, understanding of, and enjoyment of your subject matter go hand in hand.
3. Don't neglect the element of entertainment. Breaking the pace, even making a fool of oneself, is a good way to get the students' attention!

Professor John (Mr. Wizard) Taylor, Physics

What do you do with the failing student who comes to you and wants help?

My standard procedure is not to pass on little homilies, but treat the matter as the student's problem. What I do is hand the student a copy of the test and the answer sheet, and have him go through it. Then I ask the student to describe the errors he made. More often than not he will tell me he did not read the text carefully enough, or look through the choices, or pay enough attention in lecture, or tried to do too much the night before. If he still insists he did all the right things, then I sometimes tell him the competition is tougher; the peers who made him look good in high school are no longer there. Finally, if all else does not get through to him, I simply point out he may have to spend more time studying. Unless you have reason to suspect a student's study strategies are horribly inefficient, I would work with what he does best in terms of study habits.



Academic and Personal Support Services

TAs and GPTIs often need to know where to refer their students for assistance outside the classroom. The following list includes units on the Boulder campus that serve a variety of academic and personal needs.

Career Services, Willard, ground floor, 492-6541. CS provides career literature, vacancy information, placement services, cooperative education referrals, personal counseling, and group career workshops.

Financial Aid, Environmental Design 2, 492-5091.

Foreign Student and Scholar Services, Environmental Design, SW basement, 492-8057. The FSSS provides advice and support to foreign students on immigration matters and on adjustment to life at an American university. TAs can call the FSSS directly concerning questions about foreign students, or they may refer students to the FSSS.

Multicultural Center for Counseling and Community Development, Willard 134, 492-6766. MCCCD provides personal and group counseling, as well as consultation and outreach services to students, faculty, and staff. MCCCD offers groups a wide range of topics including *Time Management, Perfectionism, Choosing a Major, Coping with Grief and Loss,* etc.

Legal Services, UMC 328, 492-6813. Legal Services assists fee-paying students.

Norlin Library Reference, 492-7521 or 492-8705. Contact Deborah Fink in **Instructional Services, 492-8302,** for assistance in developing research methodology.

Nontraditional Student Center, UMC 414, 492-1536. NSC offers social support for students over 25; for single, married, and divorced students; and for single parents.

Office of Services to Disabled Students, Willard 18, 492-8671. OSDS provides information, referrals, and assistance to physically disabled, hearing impaired, visually impaired, and temporarily disabled students. **Learning Disabilities Office, Willard 305, 492-5611.** The LD staff provides diagnostic assessment and follow-up strategies for learning disabled students.

Ombudsman Office, Willard 302, 492-5077. The Ombudsman Office serves students, faculty, and staff. The Ombudsman staff provides information on campus policies, hears concerns and grievances, facilitates problem-solving as a neutral third party, and conducts workshops on conflict management.

University Learning Center, Willard 309, 492-5474. The ULC's **Academic Skills Program** helps students develop better study skills and provides consultation to faculty who wish to incorporate specific study skills into their classroom activities. The **Graduate Teacher Program** offers TA training workshops and individual, departmental, and videotape consultation to graduate students on the Boulder campus. The ULC's **Tutorial Services,** offers free individualized and small-group tutoring to CU Opportunity students and student athletes. TS also functions as a referral service to any UCB student by maintaining a list of available tutors.

Veterans Affairs, Willard 229, 492-7322.

The TUTOR
Graduate Teacher Program
Newsletter
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Boulder, Colorado 80309-0107

TO ALL:
Graduate Part-Time Instructors
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